

Thermo Nutech  
W.O. No. N9-03-131-7709

Bechtel Hanford Inc.  
SDG H0367

## Case Narrative

### 1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0367 is comprised of a single solid (large paper filter) sample designated under SAF No. B99-005 with a Project Designation of: 200-ZP-1 Process Filter Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. There was a quick turn-around time requirement for some of the requested analyses. Gamma spectroscopy and isotopic uranium data was sent by facsimile on April 1. Technetium-99 data was reported by facsimile on April 5. A complete set of data was sent by facsimile on April 6, 1999.

### 2.0 ANALYSIS NOTES

#### 2.1 Gross alpha/Gross Beta Analyses

No problems were encountered with either analysis.

#### 2.2 Technetium-99 Analyses

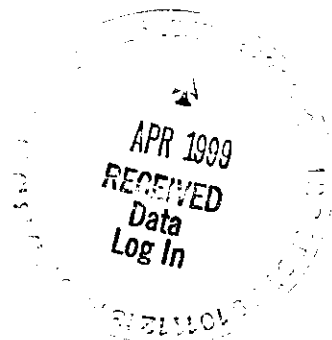
The aliquot for the analysis was reduced in order to expedite sample preparation. The sample and duplicate MDA's were greater than the RDL due to a combination of reduced aliquots and low tracer yields. The method blank exhibit activity greater and the MDA.

#### 2.3 Uranium Analyses

No problems were encountered with either analysis.

#### 2.4 Gamma Scan Analyses

No problems were encountered with either analysis.



## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0367

SDG 7709

Contact L.A. Johnson

## SAMPLE SUMMARY

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0367

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0V1L5	200 West	SOLID		N903131-01	B99-055	B99-055-03	03/17/99 09:45
Method Blank		SOLID		N903131-03	B99-055		
Lab Control Sample		SOLID		N903131-02	B99-055		
Duplicate (N903131-01)	200 West	SOLID		N903131-04	B99-055		03/17/99 09:45

## SAMPLE SUMMARY

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## SUMMARY DATA SECTION

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-CS

Version 3.06

Report date 04/06/99

TMA/RICHMOND  
SAMPLE DELIVERY GROUP H0367

SDG 7709  
Contact L.A. Johnson

QC SUMMARY

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	DEPARTMENT SAMPLE ID
7709	B99-055-03	B0V1L5	SOLID	100.0			03/26/99 9	N903131-01	7709-001
		Method Blank	SOLID					N903131-03	7709-003
		Lab Control Sample	SOLID					N903131-02	7709-002
		Duplicate (N903131-01)	SOLID	100.0			03/26/99 9	N903131-04	7709-004

QC SUMMARY

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SUMMARY DATA SECTION

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-QS  
Version 3.06  
Report date 04/06/99

# TMA/RICHMOND

SAMPLE DELIVERY GROUP H0367

SDG 7709  
Contact L.A. Johnson

## PREP BATCH SUMMARY

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
U	SOLID	Uranium, Isotopic in Soil	2851-039	5.0	1			1	1	1/1	
Beta Counting											
TC	SOLID	Technetium 99 in Soil	2851-039	10.0	1			1	1	1/1	
Gas Proportional Counting											
80A	SOLID	Gross Alpha in Soil	2851-039	20.0	1			1	1	1/1	
80B	SOLID	Gross Beta in Soil	2851-039	15.0	1			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	2851-039	15.0	1			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-PBS  
Version 3.06  
Report date 04/06/99

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H0367

SDG 7709  
Contact L.A. Johnson

**WORK SUMMARY**

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED		SUF-						
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
B0V1L5		N903131-01	7709-001	80A/80		04/06/99	04/06/99	NJV	Gross Alpha in Soil	
200 West		03/17/99	7709-001	80B/80		04/06/99	04/06/99	NJV	Gross Beta in Soil	
B99-055-03	B99-055	03/26/99	7709-001	GAM		03/30/99	04/01/99	NJV	Gamma Scan	
			7709-001	TC		04/03/99	05/20/99	NJV	Technetium 99 in Soil	
			7709-001	U		04/01/99	04/01/99	NJV	Uranium, Isotopic in Soil	
Method Blank		N903131-03	7709-003	80A/80		04/05/99	04/06/99	NJV	Gross Alpha in Soil	
			7709-003	80B/80		04/05/99	04/06/99	NJV	Gross Beta in Soil	
	B99-055		7709-003	GAM		03/30/99	04/01/99	NJV	Gamma Scan	
			7709-003	TC		04/03/99	05/20/99	NJV	Technetium 99 in Soil	
			7709-003	U		04/05/99	04/05/99	NJV	Uranium, Isotopic in Soil	
Lab Control Sample		N903131-02	7709-002	80A/80		04/05/99	04/06/99	NJV	Gross Alpha in Soil	
			7709-002	80B/80		04/05/99	04/06/99	NJV	Gross Beta in Soil	
	B99-055		7709-002	GAM		03/30/99	04/01/99	NJV	Gamma Scan	
			7709-002	TC		04/05/99	05/20/99	NJV	Technetium 99 in Soil	
			7709-002	U		04/05/99	04/05/99	NJV	Uranium, Isotopic in Soil	
Duplicate (N903131-01)		N903131-04	7709-004	80A/80		04/06/99	04/06/99	NJV	Gross Alpha in Soil	
200 West		03/17/99	7709-004	80B/80		04/06/99	04/06/99	NJV	Gross Beta in Soil	
	B99-055	03/26/99	7709-004	GAM		03/30/99	04/01/99	NJV	Gamma Scan	
			7709-004	TC		04/03/99	05/20/99	NJV	Technetium 99 in Soil	
			7709-004	U		04/05/99	04/05/99	NJV	Uranium, Isotopic in Soil	

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
80A/80	B99-055	Gross Alpha in Soil	EPA900.0	1			1	1	1		4
80B/80	B99-055	Gross Beta in Soil	EPA900.0	1			1	1	1		4
GAM	B99-055	Gamma Scan	GAMMAHI	1			1	1	1		4
TC	B99-055	Technetium 99 in Soil	TC99TRLSC	1			1	1	1		4
U	B99-055	Uranium, Isotopic in Soil	UPLATE	1			1	1	1		4
TOTALS				5			5	5	5		20

**WORK SUMMARY**

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CNS  
Version 3.06  
Report date 04/05/99

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0367**

N903131-03

Method Blank

**METHOD BLANK**

SDG <u>7709</u>	Client/Case no <u>Hanford</u>	SDG-H0367
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903131-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7709-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-055</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.029	1.4	3.0	10	U	80A
Gross Beta	12587-47-2	-0.057	4.3	7.5	10	U	80B
Technetium 99	14133-76-7	<u>4.44</u>	0.63	<u>0.98</u>	0.50		TC
Uranium 233/234	U-233/234	0.053	0.054	0.10	0.30	U	U
Uranium 235	15117-96-1	0	0.032	0.12	0.30	U	U
Uranium 238	U-238	0	0.027	0.10	0.30	U	U
Cobalt 60	10198-40-0	U		0.007	0.050	U	GAM
Cesium 134	13967-70-9	U		0.011		U	GAM
Cesium 137	10045-97-3	U		0.007	0.050	U	GAM
Europium 152	14683-23-9	U		0.021	0.10	U	GAM
Europium 154	15585-10-1	U		0.022	0.10	U	GAM
Europium 155	14391-16-3	U		0.020	0.10	U	GAM
Americium 241	14596-10-2	U		0.018		U	GAM
Uranium 238	U-238	U		0.86		U	GAM
Uranium 235	15117-96-1	U		0.028		U	GAM

200-ZP-1-Process Filter Sampling

QC-BLANK 30408

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0367

N903131-02

Lab Control Sample

## LAB CONTROL SAMPLE

SDG 7709

Contact L.A. Johnson

Client/Case no Hanford

SDG-H0367

Case no TRB-SBB-207925

Lab sample id N903131-02

Client sample id Lab Control Sample

Dept sample id 7709-002

Material/Matrix SOLID

SAF No B99-055

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	213	16	3.2	10		80A	201	8.0	106	66-134	80-120
Gross Beta	228	11	6.4	10		80B	229	9.2	100	76-124	80-120
Technetium 99	32.8	1.4	0.84	0.50	B	TC	32.7	1.3	100	83-117	80-120
Uranium 233/234	4.99	0.76	0.36	0.30		U	4.75	0.19	105	74-126	80-120
Uranium 235	3.98	0.66	0.12	0.30		U	3.89	0.16	102	73-127	80-120
Uranium 238	4.35	0.67	0.35	0.30		U	4.90	0.20	89	78-122	80-120
Cobalt 60	0.280	0.039	0.019	0.050		GAM	0.307	0.012	91	71-129	80-120
Cesium 137	0.361	0.040	0.034	0.050		GAM	0.348	0.014	104	70-130	80-120

200-ZP-1-Process Filter Sampling

QC-LCS 30407

LAB CONTROL SAMPLES

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SUMMARY DATA SECTION

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 04/06/99

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0367

N903131-04

B0V1L5

## DUPLICATE

SDG 7709

Contact L.A. JohnsonClient/Case no Hanford SDG-H0367Case no TRB-SBB-207925

## DUPLICATE

## ORIGINAL

Lab sample id N903131-04Lab sample id N903131-01Client sample id B0V1L5Dept sample id 7709-004Dept sample id 7709-001Location/Matrix 200 West SOLIDReceived 03/26/99Collected 03/17/99 09:45% solids 100.0% solids 100.0Custody/SAF No B99-055-03 B99-055

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	1σ PROT TOT LIMIT
Gross Alpha	0.968	1.6	2.7	10	U	80A	0.706	2.1	4.0	U	-	
Gross Beta	3.90	3.9	6.4	10	U	80B	1.59	4.8	8.1	U	-	
Technetium 99	0.438	1.6	<u>4.3</u>	0.50	U	TC	1.59	0.77	<u>1.8</u>	U	-	
Uranium 233/234	0.270	0.18	0.23	0.30	J	U	0.281	0.16	0.20	J	4	132
Uranium 235	0.073	0.073	0.28	0.30	U	U	0.031	0.062	0.24	U	-	
Uranium 238	0.060	0.060	0.23	0.30	U	U	0.256	0.16	0.20	J	124	163
Potassium 40	0.779	0.58	0.47			GAM	U				49	132
Cobalt 60	U		<u>0.057</u>	0.050	U	GAM	U		<u>0.22</u>	U	-	
Antimony 125	0.087	0.070	0.098		U	GAM	U				12	138
Cesium 134	U		0.064		U	GAM	U		0.15	U	-	
Cesium 137	U		<u>0.051</u>	0.050	U	GAM	U		<u>0.13</u>	U	-	
Europium 152	U		<u>0.14</u>	0.10	U	GAM	U		<u>0.32</u>	U	-	
Europium 154	U		<u>0.14</u>	0.10	U	GAM	U		<u>0.41</u>	U	-	
Europium 155	U		<u>0.12</u>	0.10	U	GAM	U		<u>0.22</u>	U	-	
Radium 228	0.181	0.17	0.19	0.20	U	GAM	U			J	5	209
Thorium 228	0.164	0.078	0.082			GAM	0.305	0.16	0.17		60	119
Thorium 232	0.181	0.17	0.19		U	GAM	U				5	209
Americium 241	U		0.15		U	GAM	U		0.13	U	-	
Uranium 238	U		6.6		U	GAM	U		23	U	-	
Uranium 235	U		0.19		U	GAM	U		0.32	U	-	

200-ZP-1-Process Filter Sampling

QC-DUP#1 30409

## DUPLICATES

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## SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVE-DUPVersion 3.05Report date 04/26/99



**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0367**

**N903131-01**

**B0V1L5**

**DATA SHEET**

SDG <u>7709</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0367</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903131-01</u>	Client sample id <u>B0V1L5</u>	
Dept sample id <u>7709-001</u>	Location/Matrix <u>200 West</u>	<u>SOLID</u>
Received <u>03/26/99</u>	Collected <u>03/17/99 09:45</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-055-03</u>	<u>B99-055</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.706	2.1	4.0	10	U	80A
Gross Beta	12587-47-2	1.59	4.8	8.1	10	U	80B
Technetium 99	14133-76-7	1.59	0.77	<u>1.8</u>	0.50	U	TC
Uranium 233/234	U-233/234	0.281	0.16	0.20	0.30	J	U
Uranium 235	15117-96-1	0.031	0.062	0.24	0.30	U	U
Uranium 238	U-238	0.256	0.16	0.20	0.30	J	U
Cobalt 60	10198-40-0	U		<u>0.22</u>	0.050	U	GAM
Cesium 134	13967-70-9	U		0.15		U	GAM
Cesium 137	10045-97-3	U		<u>0.13</u>	0.050	U	GAM
Europium 152	14683-23-9	U		<u>0.32</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.41</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.22</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.305	0.16	0.17			GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Uranium 238	U-238	U		23		U	GAM
Uranium 235	15117-96-1	U		0.32		U	GAM

200-ZP-1-Process Filter Sampling

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H0367

Test U Matrix SOLID  
SDG 7709  
Contact L.A. Johnson

**METHOD SUMMARY**  
URANIUM, ISOTOPIC IN SOIL  
ALPHA SPECTROSCOPY

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%)			
								1+3	2σ	2+3	2σ
Preparation batch 2851-039											
BOVIL5	N903131-01			7709-001	0.281 J	U	0.256 J	110	93	12	25
BLK (QC ID=30408)	N903131-03			7709-003	U	U	U				
LCS (QC ID=30407)	N903131-02			7709-002	ok	ok	ok				
Duplicate (N903131-01)	N903131-04			7709-004	ok J	- U	ok U				
Nominal values and limits from method											
				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
200-ZP-1-Process Filter Sampling								Averages 110		12	

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	Y2ED	DETECTOR
Preparation batch 2851-039 2σ prep error 5.0 % Reference Lab Notebook #2851 pg. 039																
BOVIL5	N903131-01			0.24	0.500			87	105				15	04/01/99	04/01	SS-013
BLK (QC ID=30408)	N903131-03			0.12	1.00			84	105					04/01/99	04/05	SS-015
LCS (QC ID=30407)	N903131-02			0.36	1.00			84	105					04/01/99	04/05	SS-014
Duplicate (N903131-01) (QC ID=30409)	N903131-04			0.28	0.500			76	105				19	04/01/99	04/05	SS-016
Nominal values and limits from method																
				0.30	1.00			30-105	150	100		180				

PROCEDURES	REFERENCE	UPLATE
EP-060		Soil Preparation, rev 0
EP-070		Soil Dissolution, rev 0
EP-910		Uranium Purification, rev 0
EP-008		Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.25 ± 0.20
FOR 4 SAMPLES	YIELD	83 ± 9

**METHOD SUMMARIES**

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**SUMMARY DATA SECTION**

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-CMS</u>
Version	<u>3.06</u>
Report date	<u>04/06/99</u>

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H0367

Test TC Matrix SOLID  
SDG 7709  
Contact L.A. Johnson

**METHOD SUMMARY**

TECHNETIUM 99 IN SOIL  
BETA COUNTING

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Technetium 99
Preparation batch 2851-039				
BOVIL5	N903131-01	7709-001		1.59 U
BLK (QC ID=30408)	N903131-03	7709-003		<u>4.44</u>
LCS (QC ID=30407)	N903131-02	7709-002		ok
Duplicate (N903131-01)	N903131-04	7709-004		- U

Nominal values and limits from method RDLs (pCi/g) 0.50  
200-ZP-1-Process Filter Sampling

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 2851-039 2σ prep error 10.0 % Reference Lab Notebook #2851 pg. 039																
BOVIL5	N903131-01		<u>1.8</u>	<u>1.00</u>				<u>19</u>		101			17	03/31/99	04/03	GRB-218
BLK (QC ID=30408)	N903131-03		<u>0.98</u>	2.00				<u>17</u>		101				03/31/99	04/03	GRB-220
LCS (QC ID=30407)	N903131-02		<u>0.84</u>	2.00				20		101				03/31/99	04/05	GRB-205
Duplicate (N903131-01) (QC ID=30409)	N903131-04		<u>4.3</u>	<u>1.00</u>				<u>8</u>		101			17	03/31/99	04/03	GRB-217
Nominal values and limits from method			0.50	2.00				20-105		50			180			

PROCEDURES REFERENCE TC99TRLSC  
EP-060 Soil Preparation, rev 0  
EP-020 Sample Leach For Technetium-99, rev 0  
EP-540 Technetium-99 Purification, rev 0

AVERAGES ± 2 SD MDA 2.0 ± 3.2  
FOR 4 SAMPLES YIELD 16 ± 11

**METHOD SUMMARIES**

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**SUMMARY DATA SECTION**

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 04/06/99

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0367

Test 80A Matrix SOLIDSDG 7709Contact L.A. Johnson

## METHOD SUMMARY

GROSS ALPHA IN SOIL

GAS PROPORTIONAL COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG-H0367

## RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Alpha
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Preparation batch 2851-039

BOVIL5	N903131-01	80	7709-001	U
BLK (QC ID=30408)	N903131-03	80	7709-003	U
LCS (QC ID=30407)	N903131-02	80	7709-002	ok
Duplicate (N903131-01)	N903131-04	80	7709-004	- U

Nominal values and limits from method RDLs (pCi/g) 10  
 200-ZP-1-Process Filter Sampling

## METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	------------------	-----------------	---------------	----------	-----------	-------------	---------------	-------------	----------	--------------	-------------	--------------	--------------	-------------------	------	----------

Preparation batch 2851-039 2σ prep error 20.0 % Reference Lab Notebook #2851 pg. 039

BOVIL5	N903131-01	80	4.0	0.100				58	100			20	03/31/99	04/06	GRB-110
BLK (QC ID=30408)	N903131-03	80	3.0	0.100				37	100				03/31/99	04/05	GRB-112
LCS (QC ID=30407)	N903131-02	80	3.2	0.100				38	100				03/31/99	04/05	GRB-111
Duplicate (N903131-01) (QC ID=30409)	N903131-04	80	2.7	0.100				47	100			20	03/31/99	04/06	GRB-111

Nominal values and limits from method 10 0.100 5-150 100 180

PROCEDURES	REFERENCE	EPA900.0
EP-060	Soil Preparation, rev 0	
EP-070	Soil Dissolution, rev 0	
EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1	

AVERAGES ± 2 SD	MDA <u>3.2</u> ± <u>1.1</u>
FOR 4 SAMPLES	RESIDUE <u>45</u> ± <u>20</u>

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-CMS</u>
Version	<u>3.06</u>
Report date	<u>04/06/99</u>

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0367

Test 80B Matrix SOLID  
 SDG 7709  
 Contact L.A. Johnson

## METHOD SUMMARY

GROSS BETA IN SOIL  
 GAS PROPORTIONAL COUNTING

Client Hanford  
 Contract TRB-SBB-207925  
 Case no SDG-H0367

## RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Beta
------------------	------------------	-----------------	------------------	------------

Preparation batch 2851-039

BQV1L5	N903131-01	80	7709-001	U
BLK (QC ID=30408)	N903131-03	80	7709-003	U
LCS (QC ID=30407)	N903131-02	80	7709-002	ok
Duplicate (N903131-01)	N903131-04	80	7709-004	- U

Nominal values and limits from method RDLs (pCi/g) 10  
 200-ZP-1-Process Filter Sampling

## METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	------------------	-----------------	---------------	--------------	-----------	-------------	---------------	-------------	----------	--------------	-------------	--------------	--------------	-------------------	------	----------

Preparation batch 2851-039 2σ prep error 15.0 % Reference Lab Notebook #2851 pg. 039

BQV1L5	N903131-01	80	8.1	0.100				58	100			20	03/31/99	04/06	GRB-110
BLK (QC ID=30408)	N903131-03	80	7.5	0.100				37	100				03/31/99	04/05	GRB-112
LCS (QC ID=30407)	N903131-02	80	6.4	0.100				38	100				03/31/99	04/05	GRB-111
Duplicate (N903131-01) (QC ID=30409)	N903131-04	80	6.4	0.100				47	100			20	03/31/99	04/06	GRB-111

Nominal values and limits from method 10 0.100 5-150 100 180

PROCEDURES	REFERENCE	EPA900.0
EP-060	Soil Preparation, rev 0	
EP-070	Soil Dissolution, rev 0	
EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1	

AVERAGES ± 2 SD	MDA	<u>7.1</u>	±	<u>1.7</u>
FOR 4 SAMPLES	RESIDUE	<u>45</u>	±	<u>20</u>

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-CMS</u>
Version	<u>3.06</u>
Report date	<u>04/06/99</u>

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H0367

Test GAM Matrix SOLID  
SDG 7709  
Contact L.A. Johnson

**METHOD SUMMARY**

GAMMA SCAN  
GAMMA SPECTROSCOPY

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
Preparation batch 2851-039					
BOV1L5	N903131-01		7709-001	U	U
BLK (QC ID=30408)	N903131-03		7709-003	U	U
LCS (QC ID=30407)	N903131-02		7709-002	ok	ok
Duplicate (N903131-01)	N903131-04		7709-004	- U	- U

Nominal values and limits from method RDLs (pCi/g) 0.050 0.050  
200-ZP-1-Process Filter Sampling

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MAX MDA g	ALIQUOT FAC	PREP TION	DILU- %	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 2851-039 2σ prep error 15.0 % Reference Lab Notebook #2851 pg. 039																
BOV1L5	N903131-01		<u>0.22</u>	<u>84.7</u>						159			13	03/26/99	03/30	02,01,00
BLK (QC ID=30408)	N903131-03		0.007	750						160				03/26/99	03/30	01,04,00
LCS (QC ID=30407)	N903131-02		0.034	750						160				03/26/99	03/30	01,03,00
Duplicate (N903131-01)	N903131-04		<u>0.057</u>	<u>84.7</u>						302			13	03/26/99	03/30	02,04,00
(QC ID=30409)																
Nominal values and limits from method			0.050 750							100		180				

PROCEDURES REFERENCE GAMMAHI  
EP-060 Soil Preparation, rev 0  
EP-100 Ge(Li) Preparation for Environmental Samples,  
rev 0

AVERAGES ± 2 SD MDA 0.080 ± 0.19  
FOR 4 SAMPLES YIELD        ±

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0367**

SDG 7709  
Contact L.A. Johnson

**REPORT GUIDE**

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**SAMPLE SUMMARY**

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- \* LAB SAMPLE ID is the lab's primary identification for a sample.
- \* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- \* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- \* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- \* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

**REPORT GUIDES**

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**SUMMARY DATA SECTION**

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/06/99

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0367**

SDG 7709  
Contact L.A. Johnson

**REPORT GUIDE**

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**PREPARATION BATCH SUMMARY**

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified.  
Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
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Report date 04/06/99



**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0367**

SDG 7709  
Contact L.A. Johnson

**REPORT GUIDE**

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**WORK SUMMARY**

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

**REPORT GUIDES**

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**SUMMARY DATA SECTION**

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Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
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SDG 7709  
Contact L.A. Johnson

REPORT GUIDE

Client Hanford  
Contract TRB-SBB-207925  
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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
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**SAMPLE DELIVERY GROUP H0367**

SDG 7709  
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**GUIDE, cont.**

Client Hanford  
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Case no SDG-H0367

**DATA SHEET**

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- \* An MDA is underlined if it is bigger than its RDL.

**REPORT GUIDES**

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**SUMMARY DATA SECTION**

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Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/06/99

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GUIDE, cont.

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DATA SHEET

- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SUMMARY DATA SECTION

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Protocol Hanford  
Version Ver 1.0  
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Report date 04/06/99

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**SAMPLE DELIVERY GROUP H0367**

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**REPORT GUIDE**

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**LAB CONTROL SAMPLE**

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

**REPORT GUIDES**

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**SUMMARY DATA SECTION**

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Version Ver 1.0  
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**SAMPLE DELIVERY GROUP H0367**

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**DUPLICATE**

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- \* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- \* The second limit for the RPD is the larger of:
  1. A fixed percentage specified in the protocol.

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**SUMMARY DATA SECTION**

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GUIDE, cont.

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- \* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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**SAMPLE DELIVERY GROUP H0367**

SDG 7709  
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**REPORT GUIDE**

Client Hanford  
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Case no SDG-H0367

**MATRIX SPIKE**

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- \* The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- \* The second limits are protocol defined upper and lower QC limits

**REPORT GUIDES**

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**SUMMARY DATA SECTION**

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TMA / RICHMOND  
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SDG 7709  
Contact L.A. Johnson

GUIDE, cont.

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- \* The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Protocol Hanford  
Version Ver 1.0  
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**SAMPLE DELIVERY GROUP H0367**

SDG 7709  
Contact L.A. Johnson

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Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

**METHOD SUMMARY**

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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**SUMMARY DATA SECTION**

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SAMPLE DELIVERY GROUP H0367

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Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- \* Aliquots are underlined if less than the nominal value specified for the method.
- \* Preparation factors are underlined if greater than the nominal value specified for the method.
- \* Dilution factors are underlined if greater than the nominal value specified for the method.
- \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SUMMARY DATA SECTION

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GUIDE, cont.

Client Hanford  
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METHOD SUMMARY

- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1-3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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SUMMARY DATA SECTION

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/06/99

TMA / RICHMOND  
SAMPLE DELIVERY GROUP H0367

SDG 7709  
Contact L.A. Johnson

GUIDE, cont.

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG-H0367

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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SUMMARY DATA SECTION

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
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Version 3.06  
Report date 04/06/99

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>					<b>B99-055-03</b>		Page <u>1</u> of <u>1</u>				
Collector Doug Bowers		Company Contact Keith Maki		Telephone No. 373-4989		Project Coordinator TRENT, SJ		Price Code <b>9J</b>		Data Turnaround <b>7 Days</b>			
Project Designation 200-ZP-1 - Process Filter Sampling		Sampling Location 200 West		SAF No. B99-055									
Ice Chest No. <b># 740</b>		Field Logbook No. <b>EFL 1133-7</b>		Method of Shipment Federal Express									
Shipped To TMA/RECRA		Offsite Property No.		Bill of Lading/Air Bill No.									
				COA <b>R262A1 D760</b>									
POSSIBLE SAMPLE HAZARDS/REMARKS  Special Handling and/or Storage				Preservation		None							
				Type of Container		Poly Bag							
				No. of Container(s)		1							
				Volume		~ 750g							
SAMPLE ANALYSIS				See item (1) in Special Instructions									
Sample No.		Matrix *		Sample Date		Sample Time							
✓ BQV1L5		Other Solid		3-17-99		0945		X					
CHAIN OF POSSESSION		Sign/Print Names											
		Relinquished By <i>Doug Bowers</i>		Date/Time <i>3-17-99/1257</i>		Received By <i>R Nielson</i>		Date/Time <i>3/17/99</i>		SPECIAL INSTRUCTIONS ** Close SDG upon receipt of samples.  (1) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Uranium; Technetium-99; Activity Scan		Matrix *  Soil Water Vapor Other Solid Other Liquid	
		Relinquished By <i>Fed Ex</i>		Date/Time <i>0900</i>		Received By <i>Fed Ex</i>		Date/Time <i>3-25-99</i>					
		Relinquished By <i>Doug Bowers</i>		Date/Time <i>3-25-99</i>		Received By <i>Fed Ex</i>		Date/Time <i>3-25-99</i>					
		Relinquished By <i>Fed Ex</i>		Date/Time <i>3-26-99 10:15</i>		Received By <i>McCann JR Lovers</i>		Date/Time <i>3-26-99</i>					
Relinquished By		Date/Time		Received By		Date/Time							
LABORATORY SECTION		Received By		Title						Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By						Date/Time			

Contractor <b>B4I Hanford</b>	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) <b>A 990092</b>
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PART I - TO BE COMPLETED BY ORIGINATOR

Department <b>ERC Engineering Support</b>	Section <b>Field &amp; Analytical Support</b>	Unit <b>Field Sampling</b>
The following items are to be shipped from		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Routing <b>Field Ex</b>		<input checked="" type="checkbox"/> Prepaid <input type="checkbox"/> Collect
Shipped to <b>THERMO Natch</b> Company <b>2030 Wright Avenue</b> Address <b>Richmond Ca 94804-0040</b> City <b>Attn Lerry Johnson</b> State <b>CA</b> Zip Code Country <b>(510) 235-2633</b>		Off-site Custodian
		On-site Custodian Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	12105	Paper filter sample in poly bag sample # BOVIL5 in poly cooler \$ 740	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. \_\_\_\_\_
- ☐ Business Trip
- ☐ Off-site Assignment **Bill of lading # 4235-7952-3931**
- ☐ Shipment to Subcontractor. List Subcontract No. \_\_\_\_\_
- ☐ Other (Please specify) \_\_\_\_\_

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
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Location of and Contact for Property (Name/Phone No./Bldg./Area) <b>Doug Bowers / (509) 372-9274 / Sigme 1 / 300 area</b>			
Date Ready for Shipment <b>3-25-99</b>	Cost Code to be Charged <b>R202P1 D770</b>	Approximate Date This Property will be Returned	
Originated By <b>Doug Bowers</b>	Date <b>3-25-99</b>	Authorized By <b>Doug Bowers</b>	Date <b>3-25-99</b>
Property Representative Signature	Date	Property Management Approval <b>Sandy Johnson</b>	Date <b>3/25/99</b>

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature <b>CR Nelson</b>	Date <b>3-25-99</b>
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DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

# Thermo NUtech - Richmond

## SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Bechtel Hanford</u>	Date/Time received <u>3-26-99 12:15</u>		
CoC No. <u>B99-055-03</u>			
Container I.D. No. <u>#740</u>	Requested TAT (Days) <u>7</u>	P.O. Received Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
INSPECTION			
1. Custody seals on shipping container intact?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
2. Custody seals on shipping container dated & signed?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
3. Custody seals on sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
4. Custody seals on sample containers dated & signed?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
5. Cooler Temperature: _____	Packing material is: Wet <input type="checkbox"/> Dry <input checked="" type="checkbox"/>		
6. Number of samples in shipping container: <u>1</u>			
7. Number of containers per sample: _____ (Or see CoC _____)			
8. Paperwork agrees with samples?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
9. Samples have: Tape <input checked="" type="checkbox"/> Hazard labels <input type="checkbox"/> Rad labels <input type="checkbox"/> Appropriate sample labels <input checked="" type="checkbox"/>			
10. Samples are: In good condition <input checked="" type="checkbox"/> Leaking <input type="checkbox"/> Broken Container <input type="checkbox"/> Missing <input type="checkbox"/>			
11. Describe any anomalies: _____ _____ _____ _____			
13. Was P.M. notified of any anomalies? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Date <u>3-25-99</u>			
14. Received by <u>RP Carson</u> Date: <u>3-25-99</u> Time: <u>12:15</u>			
LOGIN			
TNU W.O. No. _____	Group No. _____	Client W.O. No. _____	
PROGRAM MANAGER			
Sample holding times exceeded? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Client Notified: Name _____		Date/time _____	